REMARKS

Claims 1 - 4, 6 - 17 and 19 - 20 have been rejected under 35 U.S.C. §102 as being anticipated by Portillo (U.S. 4,416,113). This rejection is clearly erroneous.

In order to be a proper basis for rejection under 35 U.S.C. §102, a reference must disclose each and every element of the invention as claimed, which Portillo clearly does not do. Initially, it should be noted that the engine disclosed in Portillo is a different type of engine than applicant's invention. It is a form of steam engine in which a charge of water is injected into the chamber on each stroke of the piston, flashed to steam, and then discharged through an exhaust port 20 on the downstroke of the piston.

There is no generator in Portillo, and the Examiner's comment about generators having certain basis (sic, basic) elements is totally out of place in a 102 rejection.

In contrast, applicant's invention is an internal explosion engine in which the same charge of air gas is explosively ignited over and over again, with power being taken out of the engine in the form of electrical energy.

Claim 1 distinguishes initially over Portillo in that it is directed to an internal explosion engine and generator, neither of which is found in Portillo. It further distinguishes in calling for the following elements which are not found in Portillo either: (1) a charge of air sealed inside the chamber, (2) a one-way valve in communication with the chamber for admitting additional air to the chamber if the pressure in the chamber drops below a predetermined level, (3) means for repeatedly igniting the air in the chamber in an explosive manner to drive a movable member, and (4) means coupled to the movable member for providing electrical energy in response to explosion of the air. Without those elements, Portillo does not anticipate, and the rejection is erroneous.

Claims 2 - 4 and 6 - 9 depend from Claim 1 and distinguish over Portillo for the same reasons as their parent claim. In addition, Claim 2 further specifies that the movable member is a piston, Claim 3 specifies that the means for returning the movable member to the position of minimum volume comprises a flywheel on a crankshaft connected to the piston, and Claim 4 specifies that the means for providing electrical energy comprises a generator connected to the crankshaft.

Claim 6 further distinguishes in calling for a hermetically sealed housing enclosing the explosion chamber and preventing loss of the air from the chamber, and Claim 7

distinguishes in specifying that the movable member is fabricated of a ferro-magnetic material, and the means for providing electrical energy includes a coil which is coupled magnetically to the movable member.

Claim 8 further distinguishes in specifying that the means for igniting the air includes means for applying RF energy to the chamber to ionize the air and form a plasma, and means for igniting the plasma, and Claim 9 calls for electrodes in the chamber for heating the ionized air.

Like Claim 1, Claim 12 distinguishes initially over Portillo in that it is directed to an internal explosion engine and generator, neither of which is found in Portillo. It further distinguishes over Portillo in calling for the following elements which are likewise not found in Portillo: (1) a charge of air sealed within an explosion chamber, (2) means for admitting atmospheric air to the chamber if the pressure in the chamber drops below a predetermined level, (3) means for periodically, explosively igniting the air in the chamber to drive a piston, and (4) a generator connected to the crankshaft for providing electrical energy in response to movement of the piston. Without those elements, Portillo does not anticipate, and the rejection is erroneous.

Claims 14 - 19 depend from Claim 12 and distinguish over Portillo for the same reasons as their parent claim. In addition, Claim 14 calls for a flywheel on the crankshaft.

Claim 15 specifies that the means for igniting the air includes means for applying RF energy to the chamber to ionize the air and form a plasma, and means for igniting the plasma, and Claim 16 additionally calls for a magnetically actuated switch responsive to the position of the piston for delivering the spark when the piston is at or near the minimum volume position.

Claim 18 specifies that the means for admitting atmospheric air to the chamber includes a check valve .

Claim 19 specifies that the piston is fabricated of ferro-magnetic material and is coupled magnetically with a coil disposed outside cylinder, and Claim 20 calls for means for energizing the generator as a motor for moving the piston to start the engine. None of these elements are found in Portillo.

Claims 1 - 4, 6 - 17 and 19 - 20 have also been rejected under 35 U.S.C. §102 as being anticipated by Papp (U.S. 4,428,193). Claims 10, 11 and 17 are being cancelled, but reconsideration of the remaining claims is requested.

The engine disclosed in Papp requires a precise homogeneous mixture of helium, neon, argon, krypton and xenon, and requires an onboard mixer for supplying the mixture

Claim 1 distinguishes over Papp in calling for an explosion chamber, a movable member forming one wall of the chamber, a charge of air sealed inside the chamber, a one-way valve in communication with the chamber for admitting additional air to the chamber if the pressure in the chamber drops below a predetermined level, means for repeatedly igniting the air in the chamber in an explosive manner to drive the movable member from a position of minimum volume to a position of maximum volume, means for returning the movable member from the position of maximum volume to the position of minimum volume, and means coupled to the movable member for providing electrical energy in response to explosion of the air.

Claims 2 - 4 and 6 - 9 depend from Claim 1 and distinguish over Papp for the same reasons as their amended parent claim.

Claim 12 distinguishes over Papp in calling for a cylinder, a piston movable within the cylinder to form an explosion chamber of variable volume, a charge of air sealed within the chamber, means for admitting atmospheric air to the chamber if the pressure in the chamber drops below a predetermined level, means for periodically, explosively igniting the air in the chamber to drive the piston between positions of minimum and maximum volume, a crankshaft driven by the piston, and a generator connected to the crankshaft for providing electrical energy in response to movement of the piston.

Claims 14 - 16 and 19 - 20 depend from Claim 12 and are directed to patentable subject matter for the same reasons as their amended parent claim.

Claims 5 and 21 - 27 have been rejected under 35 U.S.C. §103 as being unpatentable over Papp in view of Morris (U.S. 2,984,067). Papp is discussed above, and Morris is relied upon as showing a crankshaft with cylinders positioned opposite each other. Reconsideration is requested.

The engine shown in Morris is another steam engine which has little, if any, relevance to the invention. The fact that it may have cylinders positioned opposite each other is of no consequence. They are two separate cylinders with separate pistons and a crankshaft and connecting rods linking the pistons together.

Moreover, there is no motivation or other basis in the references for combining selected elements of Morris with those of Papp, and doing so would require a substantial restructuring of the Papp engine. The argument made by the Examiner that the use of

opposing pistons in Papp would be a more effective way of returning the pistons to the top dead center position is without support in the references. It is pure conjecture on the part of the Examiner, motivated solely by applicant's own disclosure and claims.

Claim 5 depends from Claim 1 and is directed to patentable subject matter for the same reasons as its amended parent claim. In addition, it further distinguishes in calling for a second explosion chamber having a movable member connected to the first named member, a charge of air sealed inside the second chamber, and means for igniting the air in the second chamber in an explosive manner.

Claim 21 distinguishes over the references in calling for a cylinder, a pair of pistons connected together for movement in concert within the cylinder to form a pair of explosion chambers of variable volume, a charge of non-combustible gas sealed within each of the chambers, means for alternately igniting the non-combustible gas in the two chambers in an explosive manner to drive the pistons between positions of minimum and maximum volume, a magnet coupled to the pistons movement with the pistons, and a coil positioned outside the cylinder near the magnet for producing electrical energy in response to movement of the pistons.

Claims 22 - 27 depend from Claim 22 and are directed to patentable subject matter for the same reasons as their parent claim. In addition, they call for additional features which are not found in or suggested by the references.

Claim 22, for example, specifies that the non-combustible gas is selected from the group consisting of air, inert gas, and combinations thereof, and Claim 23 the means for igniting the gas in each of the chambers as including means for applying RF energy to the chamber to ionize the gas and form a plasma, and means for igniting the plasma.

Claim 24 further distinguishes in calling for switches responsive to the positions of the pistons for igniting the plasma when the pistons are at or near the minimum volume positions.

Claim 25 calls for electrodes in the chambers for heating the ionized gas, Claim 26 calls for a valve communicating with the chamber for replenishing the gas in the chamber, and Claim 27 specifies that the valve is a check valve which admits additional gas into the chamber when the pressure in the chamber drops below a predetermined level.

Finally, Claim 18 has been rejected under 35 U.S.C. §103 as being unpatentable over Papp. Claim 18 depends from Claim 12 and is directed to patentable subject matter

for the same reasons as its amended parent claim. In that regard, it will be noted that Claims 12 and 18 call for a charge of air sealed within the chamber and means for admitting atmospheric air to the chamber if the pressure in the chamber drops below a predetermined level, and Claim 18 specifies that the means for admitting the air includes a check valve. This provides a very elegant system in which the air is automatically replenished as needed in cylinder, and it not possible in Papp where the engine requires a special fuel mixture in order to operate. Adding a check valve to admit atmospheric air to the engine of Papp would render that engine unfit for its intended purpose, and a modification which does that is not a proper basis for obviousness under 35 U.S.C. §103 .

With this amendment, it is respectfully submitted that Claims 1 - 9, 12 - 16 and 18 - 27 are all directed to patentable subject matter and that the application is in condition for allowance.

The Commissioner is authorized to charge any fees required in connection with this matter, including extension fees, to Deposit Account 50-2975, Order No. A-75035.

Respectfully submitted,

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